

Draft

Technical Support Document

for

the Notice of Proposed Rulemaking

on

the Final Plan for Attainment of the 24-Hour PM-10 Standard --
Maricopa County PM-10 Nonattainment Area (May, 1997)

Submitted by
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Air Division
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TSD for the Final Maricopa County 24-hour PM-10 Plan

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Technical Support Document for the Notice of Proposed Rulemaking on the Final *Plan for Attainment of the 24-Hour PM-10 Standard -- Maricopa County PM-10 Nonattainment Area (May, 1997)*

I. Introduction and Background

This technical support document (TSD) supports EPA's proposed rulemaking on the final *Plan for Attainment of the 24-hour PM-10 Standard - Maricopa County PM-10 Nonattainment Area*, dated March 1997 ("plan" or "microscale plan") submitted by the Arizona Department of Environmental Quality (ADEQ) on May 7, 1997. The microscale plan addresses exceedances of the 24-hour PM-10 National Ambient Air Quality Standard (NAAQS)¹ that occurred at five monitoring sites in the Phoenix metropolitan area in 1995. The plan was developed in cooperation with the Maricopa County Environmental Services Department (MCESD).

On May 10, 1996, EPA found that the Maricopa area had not attained the PM-10 standards by the statutory deadline of December 31, 1994. This finding resulted in the reclassification of the Maricopa area to serious for PM-10 and the requirement that the State submit a serious area plan by December 10, 1997. See 61 FR 21372. On May 14, 1996, the Court of Appeals for the Ninth Circuit found that the Maricopa County moderate area PM-10 plan failed to address the 24-hour PM-10 standard as required by the Clean Air Act (*Ober v. EPA*, 84 F.3d 304 (9th Cir. 1996)). As a result, the court mandated that EPA require “the State to submit a separate demonstration of the implementation of all ‘reasonably available control measures’ targeting the 24 hour standard violations; attainment and ‘reasonable further progress’ for the 24 hour standard.”

In determining how to respond to the Ninth Circuit order, EPA, ADEQ, and the Maricopa County Environmental Services Department (MCESD) agreed that it is reasonable to incorporate the additional moderate area planning elements required by the court into the work being done on the new serious area PM-10 plan rather than undertake a completely separate planning effort. At the same time the Agency recognized that deferring submittal of a plan addressing the moderate area plan deficiencies until the serious area submittal deadline of December 10, 1997 would not constitute a timely response to the court.

During 1995, ADEQ, the Maricopa Association of Governments (MAG) and MCESD conducted a PM-10 microscale monitoring and inventory study. The results of this study provide detailed information on exceedances of the 24-hour standard in the Maricopa area and a basis to advance part of the serious area plan. Given the availability of this study, it was agreed to split the serious area plan into two parts: a microscale plan and a regional plan that taken together would satisfy both the additional moderate area and the serious area planning requirements. The microscale plan would address the 24-hour standard violations at specific monitors.

On September 18, 1996, EPA sent a letter to ADEQ, outlining the required elements of the microscale plan and establishing the deadlines for its submittal. See letters, Felicia Marcus, Regional Administrator, U.S. EPA-Region 9 to Russell Rhoades, Director, ADEQ, September 18, 1996 with attachment and March 5, 1997 (“Marcus letter”).² The required elements for the microscale plan are, for each of the five listed monitors, air quality modeling and emission inventories, evaluation and implementation of reasonably available measures/best available control measure (RACM/BACM), and attainment and reasonable further progress (RFP) demonstrations. In addition, the plan must conform to all general SIP requirements. Measures adopted under the microscale plan will need to be adopted and implemented for the Maricopa County nonattainment area and not just for the localized area around the monitors. EPA’s evaluation of the microscale plan’s compliance with these requirements is discussed in this technical support document.

Clean Air Act (CAA) requirements for PM-10 area plans can be found in sections 110(a) (general SIP requirement), 172(c) (general nonattainment area plan requirements), 189(a) (moderate PM-10 areas), and 189(b) (serious PM-10 areas). EPA guidance on these requirements is generally found in *State Implementation Plans; General Preamble for the Implementation of Title I of the Clean Air Act Amendments of 1990*, April 16, 1992 (57 FR 13498) and April 28, 1992 (57 FR 18070) (*General Preamble*) and the *State Implementation Plans for Serious PM-10 Nonattainment Areas, and Attainment Date Waivers for PM-10 Areas Generally; Addendum to the General Preamble for the Implementation of Title I of the Clean Air Act Amendments of 1990*, August 10, 1994 (59 FR 41998) (*Addendum*).

This TSD is divided into three parts. The first part provides EPA’s approval criteria for, de-

scribes, and evaluates the technical basis of the plan: the emission inventory, air quality modeling, and identification of source categories contributing to the evaluated exceedances. The second part provides the approval criteria for, describes and evaluates the proposed control strategy and the attainment and reasonable further progress demonstrations. The final part describes the plan's compliance with general SIP requirements including public notice and hearing, provisions for adequate personnel, funding, and authority to carry out the implementation plan, and enforcement methodology.

II. Evaluation of the Air Quality Modeling

A. Criteria for Approval

1. Monitors to Be Evaluated

All 1995 exceedances of the 24-hour PM-10 standard at the (East) Chandler, West Chandler, Gilbert, Maryvale, and Salt River monitors are to be addressed in the microscale plan. See Marcus letter. A list of the 24-hour exceedances at the five monitors can be found in Table II-1.

2. Emission Inventories

Section 172(c)(3) requires states to submit comprehensive, accurate, and current emission inventory of actual emissions from all sources of PM-10 in the nonattainment area. The emission inventory required for the microscale plan, however, is just the inventory to support the site-by-site air quality modeling and not the full regional inventory needed to meet the section 172(c)(3) requirement. See Marcus letter. The full regional emission inventory is being developed and will be submitted as part of the regional serious area plan in December.

For the microscale plan, the chosen air quality model dictates the scope and form of the emission inventory. The base year inventory must reflect the conditions on the modeled exceedance day by representing actual conditions and source operations to the extent feasible and including all emission sources within the final modeling domain.

3. Air Quality Modeling

Section 189(b)(1)(A)(i) requires serious area plans to include air quality modeling as part of its demonstration of attainment. The *PM-10 SIP Development Guideline* (EPA-450/2-86-001, June 1987) specified that, in order of preference, the modeling used in attainment demonstrations can be 1) a combination of receptor and dispersion models, 2) dispersion models alone, or 3) two receptor models alone if dispersion modeling is inappropriate. For completeness (40 CFR part 51, Appendix V, 2.2(e)), the SIP should include input and output data, including meteorological data, justification for the models used and for any off-site data used, and assumptions and settings used in the models.

Appropriate model use, such as the modeling of projections with allowable emissions rather than actual, is described in the *Guideline On Air Quality Models* (Revised), 1986 (GAQM), and in the user guides for particular models. Section 7.2.2. of the GAQM calls for the use of ISC2 (ISCST2 or ISCLT2) for source-specific analyses of complicated sources of PM-10 and urges that receptor models be used in conjunction with dispersion models. If both receptor and dispersion modeling techniques are used, the results should be reconciled using the *Protocol for Reconciling Differences Among Receptor and Dispersion Models* (EPA-450/4-87-008, March 1987).

No model validation is normally required when an EPA-approved model (such as ISCST) is used in permitting of point sources because the testing procedures used by EPA to approve the model in the first place are assumed to be sufficient. However, for a SIP it is desirable to evaluate the model results to ensure that the area's exceedances are being reasonably replicated. This need for validation is most important when the emission inputs to the model are uncertain, such as when fugitive dust is a major component. A formal study in accordance with EPA guidance on model acceptability is not necessary for this validation, but there should be some evaluation of the model's performance, with consideration given to the interaction of meteorological inputs and the emissions from contributing pollution sources.

For the microscale plan, base case air quality modeling was required for every exceedance at the (East) Chandler, West Chandler, Gilbert, and Maryvale monitors. For the Salt River monitor, air quality modeling was required for each unique emissions scenario leading to an exceedance. In addition, all modeling inputs had to be fully documented and the air quality modeling protocols must conform to EPA guidance or be approved in advance by EPA. See Marcus letter.

Table II-1
24-Hour PM-10 Exceedances in 1995 - Maricopa County

PM-10 Monitoring Site	Date	Ambient PM-10 (g/m ³)
East Chandler	6/28/95	160.0
	7/30/95	251.7
Gilbert	4/9/95	182.8
Maryvale	4/9/95	282.4
West Chandler	4/9/95	462.5
	7/30/95	294.3
Salt River	6/12/95	169.3
	7/20/95	165.4
	7/26/95	166.3
	8/1/95	165.2
	8/3/95	151.0
	9/14/95	167.9
	9/22/95	150.3
	10/10/95	182.5
	10/12/95	157.7
	10/16/95	177.8
	10/20/95	188.2
	10/24/95	198.9
	10/26/95	196.0
	11/21/95	175.9
	12/1/95	178.1
	12/11/95	156.5

Source: Plan, p. 15, Table 3-1.

B. Evaluation of the State Submittal

1. The Microscale Approach

The microscale plan uses a microscale approach to modeling PM-10 exceedances. The principal idea behind the microscale approach is that if PM-10 exceedances are caused mainly by relatively nearby sources, then an attainment demonstration can be based on modeling over a relatively small ("microscale") geographic domain, that is, over sub-areas of the entire nonattainment area. This approach differs significantly from the standard approaches in EPA guidelines and from approaches used in other areas. This TSD section provides a summary of the approach, its rationale and its relation to EPA guidance. The microscale approach is more fully described in *Microscale Monitoring and Modeling Protocol for the Maricopa PM-10 Nonattainment Area* by Harding Lawson Associates, August 31, 1994 ("protocol"). See also EPA's comment letters on the protocol. Letters, Scott Bohning, EPA to Liz Szews, Maricopa Association of Governments, October 17, 1994 and October 31, 1994 (found in the docket).

Normally, attainment must be demonstrated for the entire nonattainment area, given that the NAAQS apply in all ambient air; therefore, air quality modeling should include the entire area.³ However, emission inventory development and modeling for areas with substantial fugitive dust problems, such as the Maricopa area, have proved difficult because of fugitive dust emissions' marked uncertainty and temporal and spatial variability. Accurately estimating emissions for input to dispersion modeling of fugitive dust over a large area is much more difficult than for point sources of gaseous pollutants, which were the archetypes for development of much of EPA's modeling guidance.

Partly because of the emission inventory uncertainty for PM-10, initial EPA PM-10 guidance suggested alternatives such as the Chemical Mass Balance and the microinventory method, which focus on analysis of concentrations at specific monitoring sites. For these alternatives, the sites analyzed were to be shown to be "controlling", i.e., the resulting emission reduction targets were to be shown sufficient for attainment throughout the nonattainment area. The guidance did not describe how this showing was to be made but did require that the some justification was to be provided on how the sites chosen were "worst case." Worst case, in this case, meant the site requiring the most stringent level of control or being at least representative of exceedances in the area. These alternatives led to the sub-area or microscale approach. The term "microscale" is used in EPA monitoring regulations (40 CFR part 58, Appendix E, and elsewhere) to mean a scale of several to one hundred meters. In the Maricopa microscale plan, its meaning is in opposition to "regional", which refers to the whole nonattainment area.

The idea of intensively inventorying and modeling a small area is a good one for assessing a pollutant like PM-10. PM-10 is emitted near ground level and has relatively sharp spatial gradients as dust settles out with distance from the emitting source, and hence has more localized effects than the other criteria pollutants, which are typically buoyant and gaseous. A focus on nearby sources and their activity levels is especially appropriate for fugitive PM-10, with its dependence on local soil characteristics and micrometeorology. A "microinventory" of the relatively small area affecting a particular monitor, together with the linear rollback model, was recommended as an attainment demonstration approach in early EPA guidance on PM-10 (*Receptor Model Technical Series, Volume I, Overview of Receptor Model Application to Particulate Source Apportionment*, EPA-450-4-81-016a, July 1981 p. 27). The microscale approach can be seen as an outgrowth of this: intensive emission inventory work on the area most likely to influence concentrations at a monitor.

The approach in the microscale plan goes a step further by using the microinventory as input into a dispersion model (rather than a receptor model) to enable a more precise apportionment of the various sources' effects. It also allows an assessment of their effects at locations other than the monitor. For fugitive dust sources, validation of a model at this scale seems more likely than on a

large scale, where of necessity the inventory inputs must be more generic and represent more numerous sources.

Nevertheless, sources can have effects farther away than is implied by the term “microscale”. The finer component of PM-10 can settle out relatively slowly, and during high wind conditions, at least some of even the larger component can be carried long distances. These effects create a “regional” component that is not captured in the emissions of a small area near a monitor. This regional component can be dealt with as part of a regional modeling exercise or as part of a “background” to be added to the microscale results; the microscale does the latter. (For modeling purposes, “background” is the sum of natural and anthropogenic sources not explicitly accounted for in a model.)

Incorporating the regional component in the background makes accurate estimation of the background important. For modeling purposes, “background” is the sum of natural and anthropogenic sources not explicitly accounted for in the model. For microscale modeling, the smaller the background, the more valid is the assumption that nearby sources cause PM-10 exceedances. For the Maricopa microscale plan, control measures derived from the microscale analysis will be applied over the entire nonattainment area; therefore, the background (which is also largely fugitive dust) will also be reduced. The plan, however, takes a conservative approach by assuming the background levels remain constant resulting in conservative attainment demonstrations that partially compensate for any shortcomings in the microscale approach.

EPA guidance for ozone and carbon monoxide modeling (e.g., *Guideline for the Regulatory Application of the Urban Airshed Model*, EPA-450/4-91-013, July 1991) describes the selection of pollution episodes to model. There is no comparable guidance for PM-10, but the reasoning is the same. Basically, the day(s) chosen should be representative of the meteorological conditions and emissions scenarios that lead to NAAQS exceedances and should have adequate databases for the development of model inputs. In addition, a microscale approach must ensure that the particular sites chosen for modeling are worst case or at least representative of PM₁₀ exceedances in the area.

2. Evaluation of the State's Submittal

a. Model Selection and Domain Definition

The choice of the ISCST2 model (Plan Appendix A, p. 4-12) for analyzing sub-areas is in accordance with EPA guidance (GAQM 7.2.2). FDM, the Fugitive Dust Model, might also have been considered, given its ability to model the effect of an area source within the boundaries of the sub-area. The area source algorithm in ISC2 does not have this capability. Still, given FDM's other limitations, ISC2 is a reasonable choice. The microscale plan states that ISC3 (which incorporates the FDM area source algorithm) over predicted (Appendix G, p. 2). While this result is puzzling given that ISC3 is supposed to be a better-performing upgrade to ISC2, ISC2 is still acceptable.

The domain definition description given in the microscale plan is sketchy and does not fully explain how changes in emission density or local meteorological measurements were used in determining the boundaries. The plan (Appendix A, p. 4-23 ff) briefly describes how SCREEN2 and ISCST2 were used to see how near a source had to be to have a noticeable impact at the monitor and also to see which areas needed higher inventory resolution because of their greater influence at the monitor. This approach is reasonable for determining model domains within the microscale framework, though a more complete explanation would be helpful. (See also discussion

of background concentration, below.)

A 400-meter grid cell size was chosen for the Salt River sub-area (Plan, Appendix A, p. 7-15) and for the West Chandler sub-area (Plan, Appendix A, p. 5-1). The cell sizes for Maryvale (161 m) and Gilbert (202 m) are smaller but seem coarse for a modeling receptor grid for a "microscale approach": for modeling of sources for permits a grid spacing of 50 meters is sometimes used. This grid cell size was also used for the inventory (though it need not have been), which is more appropriate given the coarse resolution of available inventory information. A smaller inventory grid cell size would reduce the impact of the ISC2 area source algorithm limitations mentioned above. These choices of cell size choice are not ideal, but the overall effect is probably small given that the dominant sources are area sources rather than point sources.

Additional work for the Salt River site involved microscopic analysis of particles and the CMB7 receptor model. This results of this additional work are briefly summarized in the plan (Appendix A, p. 6-25 ff). Although little quantitative results are stated, qualitatively the analyses agree with the dispersion modeling results by pointing to fugitive dust as the main component of PM-10 at the site. Unfortunately, source data for the 19th Avenue Landfill Remediation (the main source according to the ISC results) were not available. While the results do not add much beyond the ISC results, they are encouraging in roughly corroborating the dispersion modeling.

b. Meteorological and Emissions Inputs

As described in the protocol, the microscale study took place throughout 1995. In addition to EPA's standard AP-42 emission methodologies, and some other prior special studies for particular source categories cited in the plan (Appendix A, p. 21), the microscale study included field surveys, aerial photography, examination of activity logs, and interviews with source operators (protocol and Plan, Chapters 4 and 6). This study resulted in a substantially better emissions inventory data than is usually available, overcoming the difficulties encountered in previous efforts. In addition, the use of portable PM-10 samplers and on-site meteorological measurements further enriched the database, although this information is not summarized in the microscale plan. Together, this information provided a strong basis for the microscale modeling.

Windroses are provided for the sites, and the plan notes that meteorological monitoring was done for each modeled sub-area and summaries of the exceedances' meteorological conditions. Plan, Appendix A, p. 3-1 ff. The plan clarifies (Appendix G, p.3), that Desert Rock, Nevada upper air data was used for initial modeling and data from Tucson for final modeling. What upper air data to use is a judgement call since nearby upper air data is typically not available. In addition, under the windy and low-buoyancy conditions of the exceedances, the mixing height determined from the upper air data has essentially no effect on concentrations anyway. Plan, Appendix A, p. 3-1 ff.

c. Site Selection

The rationale for the choice of sites is explained in the protocol, and in the microscale plan (Appendix A, p. 2-2). Based on past emission inventory and modeling work, the agencies involved in the microscale study identified several fugitive dust source categories as being especially important for PM-10 exceedances: urban lots, highway and other construction activities, agricultural activities, and some known industrial sources. Sites were chosen in areas of high emissions density: South Phoenix for its mix of urban sources; Salt River for its proximity to industrial sources;⁴ West Chandler for its nearby highway construction; and East Chandler for its mix of urban

and agricultural sources. Later, the Gilbert and Maryvale sites were added because of the exceedances observed during the field study. These sites are characterized by nearby agricultural land and by park landscaping, respectively. Together, these sites represent a good cross-section of the emission sources known in the Maricopa area and, given the monitored exceedances, can be considered representative of exceedance conditions. It cannot be known with certainty whether they are “worst case” in the absolute sense, given the necessarily finite number of monitors, but are certainly good choices from among those available.

d. Episode Selection

Episodes were selected from among exceedances observed during the 1995 field study which is appropriate given the basis of the microscale approach is modeling of days for which an intensive database is available. The microscale plan (Appendix A, p. 4-16) stated that a single episode day was to be chosen, but since each event and site is modeled independently in the microscale approach, the selection of a single episode day is not strictly necessary.

For the Salt River site, October 16, 1995 was selected since all the relevant sources were in operation, the model validated well, and an October day was desirable since many of the exceedances were in that month. Plan, Appendix A, pp. 7-18 ff. These are all good rationales. Multiple days could have been used and would generally have been desirable given the seasonal shift noted in the modeling documentation: morning hourly high concentrations in the summer, but lower morning concentrations with some high evening values in the fall. Plan, Appendix A, Chapter 7. However, these varying concentrations were mainly dependent on wind direction and the October 16, 1995 day exhibits fairly high values both morning and evening. Thus, the modeled phenomena are similar enough to the other episodes at the Salt River site that this single day is sufficient.

For the West Chandler monitor, the April 9, 1995 episode was chosen because of data shortcomings for the other exceedance day at the monitor. For the Gilbert and Maryvale monitors, the April 9, 1995 episode was also chosen because it was the only 1995 exceedance at those monitors.

Overall, the microscale plan's selection of episodes for modeling was reasonable and acceptable.

e. Background Concentration

Modeling accounts for the natural and anthropogenic sources that are not explicitly handled in the modeling analysis. The background is added to the model predictions to determine the total impact at a receptor. In EPA guidance (*GAQM* section 9.2), background is to be determined from a regional background monitor or from monitor(s) that affect the receptor during meteorological conditions of concern (e.g., upwind). Ideally, a background monitor is not itself influenced by nearby sources.

A component of background is due to nearby sources, which should be explicitly modeled in multi-source areas. *GAQM* suggests trial and error analyses to help determine which nearby sources should be included in the modeling. In the microscale plan, this component is dealt with through the definition of the modeling domain (Appendix A, p. 4-23 ff), in which SCREEN and ISC were used to delimit the region contributing substantially to the microscale monitor locations. The plan appears to be in accordance with the *GAQM* recommendations in this area.

The modeling documentation (Appendix A, p. 4-15 ff) lists the steps used in developing background concentrations for sites other than Salt River. The documentation is not clear. Wind speeds and directions for particular hours are stated to have been used in determining which grid cells, and thus land uses, influenced the monitors. Apparently, the land uses upwind of a monitor were assigned the concentrations observed at the monitor, for use as background; and cells not upwind of a monitor were assigned backgrounds based on their land use's similarity to cells that were upwind of monitors. If this is what was done, it seems a reasonable procedure.

The use of neighborhood scale monitors for determining background is appropriate since microscale sites with known nearby sources could not be used as background. Still, this choice underlines a limitation of the microscale approach: these monitors have PM-10 concentrations above natural background yet are assumed not to be influenced by nearby sources. In other words, a microscale approach cannot explain concentrations at these monitors.

The term "microscale" is used in a different sense in the microscale plan than in the EPA's regulations on monitoring (40 CFR part 58). In part 58, "microscale" means from several to 100 meters, "neighborhood scale" means from 500 to 4000 meters, i.e. roughly one-third to 2½ miles -- the latter is approximately the scale of the "microscale" modeling domains in the microscale plan. It is curious that this size is what a "background" monitor represents, but also the size of the area that must be explicitly modeled. Alleviating this difficulty would require that the background sites themselves be modeled, but that would lead to regional scale modeling, which would be outside the microscale approach. The microscale plan (Appendix G., pp. 15-16) addresses this by noting that the background neighborhood monitors do not include the types of localized emission sources that lead to exceedances. Within the microscale approach, the chosen method is perhaps the best that could be used.

In any case, the method used apparently worked well, considering the decent agreement between model and observation. In addition, as mentioned above, the constant background represents a conservative attainment approach. Regional impacts will be addressed in the full serious area plan due in December, 1997.

f. Model Validation

Tables 5-1 and 7-2 of the modeling documentation (Plan, Appendix A, p. 5-4 and p. 7-18) compare model predictions to the observations. Additional hourly comparisons are given for the West Chandler site (Figure 5-7 in Appendix A, p. 5-12). Though a full model evaluation need not be done, ideally there should have been an evaluation of model performance at more than one point, which in the microscale plan was the monitor or a point nearby. Isopleths of model predicted concentration would aid in this evaluation, as would quantitative comparisons to any monitoring data available from portable samplers used during the study. Unfortunately, only one monitor per sub-area was available (Appendix G, p. 16). The plan also notes (Appendix A, p. 5-3, and Appendix G, p. 6) that the Gilbert modeling shows better agreement when observations are compared to a point near the monitor, rather than at the monitor itself, probably due to local wind variability. This small spatial displacement is acceptable, and well within the norm for performance of Gaussian dispersion models, which are very sensitive to the inputted wind directions.

The agreement for Salt River site is generally good, though there seems to be a seasonal trend of over prediction in the summer, fairly close agreement in fall, and under prediction in winter. Further examination might explain this based on characteristics of the sources and the meteorological conditions. However, as discussed previously in the section on episode selection,

the October 16 1995 day is sufficient for an attainment demonstration, with its 178 g/m³ observation and 167 g/m³ prediction (including 78 g/m³ background).

Agreement is not as good for the other sites, as seen in Table II-2. It is notable that the background contribution is a high percentage of the total. These high background levels indicate a limitation of the microscale approach, the key assumption of which is that exceedances are caused by nearby sources. If this assumption were completely true, a lower background would be expected. Nevertheless, overall there is good model performance in the microscale plan. Gaussian dispersion models do well to predict concentrations at a particular time and place within a factor of two, while remaining reliable for predicting the maximum over a set of times and places, such as needed for NAAQS compliance demonstrations.

Table II-2
PM-10 Microscale Modeling Predictions

Site	Observation	ISCST2 value	+ Background =	Prediction
Maryvale	282	291	90	381
West Chandler	463	235	80	315
Gilbert	182	123	90	213
Salt River	178	89	78	167

Source: Plan, Appendix A, Table 5-1, p. 5-4 and Table 7-2, p. 7-17.

g. Attainment Demonstration

The microscale plan's attainment demonstration approach within each sub-area or modeling domain was proportional rollback. Though the term is often associated with the Chemical Mass Balance model (CMB), every attainment demonstration for a pollutant that is not transformed in the atmosphere (that is, an "inert" pollutant) is implicitly proportional rollback, so the microscale plan's approach is acceptable. The basic assumption in proportional rollback is that a given percent reduction in emissions yields the same percent reduction in concentration at the receptor.

Each source's contribution to the monitored concentration is determined ("source apportionment"). Control efficiencies are then applied to each source type (rollback), and the reduced source contributions summed, so that the total rollback is proportional for each source type. Stated in terms of a formula: if the emissions E_i from source i contribute χ_i to the concentration at the monitor, then the effect of emission reductions ΔE_i at the sources is:

$$\sum \chi_i \left(\frac{\Delta E_i}{E_i} \right) \approx \sum \Delta E_i \left(\frac{\chi_i}{E_i} \right)$$

Each source's emissions are rolled back by a percentage $\Delta E_i/E_i$, the monitored effect of which is proportional to its contribution χ_i . For an attainment demonstration, the reductions ΔE_i must be chosen so that the sum of their effects is enough to bring the total down to the NAAQS. In CMB, each source's (χ_i/E_i) "dispersion factor" is determined through chemical analysis of samples at monitors and near typical source types. In ISC and other dispersion models it is determined by the dispersion algorithms. In CMB, the "dispersion factor" is assumed independent of distance, but in a dispersion model the factor causes a lessening of effect with distance from the emitting source.

The chosen model should be used to evaluate the effectiveness of controls throughout the entire modeling domain, that is, “proportional rollback” at every receptor point. A control strategy sufficient for attainment at the monitor or at the maximum modeled receptor might not be enough at other receptor points, where source contributions would be in different proportions because of the varying distances between the receptors and the sources. This effect is probably not important for the Maryvale or Salt River sub-areas (where a single source category is dominant) but may well be important for the Gilbert and West Chandler sub-areas, with their mix of agricultural and construction sources. This argument is made for the Maryvale case in the microscale (Appendix G, p. 17). The plan also states (Appendix G, p. 17) that just two receptors for the Salt River sub-area exceeded and both can show attainment with the planned control measures.

However, for West Chandler and Gilbert, this point is moot since attainment was not demonstrated. When additional controls are analyzed, an array of points within each modeling domain should be evaluated for NAAQS attainment. Evaluation of the controls at a single point will not be adequate for an attainment demonstration.

As the sub-areas are representative of the sources and conditions that lead to exceedances, the microscale plan contains adequate air quality modeling for demonstrating attainment of the 24-hour PM-10 NAAQS within the context of the microscale approach for the Maryvale and Salt River sites. For the Gilbert and West Chandler sites, evaluation of the controls at a single point is not *a priori* adequate for an attainment demonstration.

C. Source Apportionment and Reductions needed for Attainment

1. West Chandler Site

The West Chandler monitoring site is located near the corner of Price and Frye Roads and is bordered on the west by agricultural fields (which were idle on April 9, 1995), agricultural aprons, and the right of way for Price Road/Freeway which was under construction in early 1995. See Plan, Appendix A, pp. 4-1 and 4-5.

The modeling showed that windblown fugitive dust, mainly from the agricultural field and the road construction, was the largest contributor to the modeled April 9, 1995 exceedance. Fugitive dust from vacant lands and agricultural aprons was also a significant contributor. See Table II-3. The background concentration for this site is 80 g/m³. (Plan, page 19). The reduction needed for attainment, net of background, is 78 percent.⁵

Table II-3

Local Source Contribution to the West Chandler Maximum Concentration

April 9, 1995

Source Type	Predicted PM-10 Impacts (g/m ³)	Percent Contribution to Maximum Impact
Agricultural Fields	194.7	62.0
Road Construction (disturbed cleared area)	68.7	21.9
Vacant Lands	28.1	8.9
Agricultural Aprons	21.7	6.9
Unpaved Roads	0.5	0.2
Paved Roads	0.2	0.1
Total (without background)	313.9	100.0

Source: Plan, Appendix A, pp. 5-8 and 5-9.

2. Gilbert Site

The Gilbert monitoring site is located on the grounds of the Gilbert's wastewater treatment plan and has an agricultural apron to its north, paved and unpaved parking to the north and west, and a city park to the south. Plan, Appendix A, pp. 4-2 and 4-5. The modeling showed that windblown fugitive dust from agricultural aprons and unpaved parking lots was the largest contributor to the modeled April 9, 1995 exceedance. See Plan, p. 18. Fugitive dust from vacant lands was also a significant contributor to the exceedance. See Table II-4. The background concentration for this site is 90 g/m³. Plan, p. 18. The reduction needed for attainment, net of background, is 51 percent.⁶

Table II-4

Source Contribution to the Gilbert Maximum Concentration

April 9, 1995

Source Type	Predicted PM-10 Impacts (g/m ³)	Percent Contribution to Maximum Impact
Agricultural Aprons	55.63	45.0
Unpaved Parking Lots	51.31	41.5
Disturbed Cleared Area*	14.15	11.5
Paved Roads	1.55	1.3
Unpaved Roads	0.46	0.7
Total (without background)	123.1	100

Source: Plan, Appendix A, pp. 5-9 and 5-11.

* This category is identified as vacant land in Appendix A (p. 5-9), but as disturbed cleared area in the body of the microscale plan (p. 18). Follow-up discussions with ADEQ clarified that the appropriate category designation is disturbed cleared area.

3. Maryvale Site

The Maryvale site is located next to the Desert West Park in west Phoenix. Plan, Appendix A, pp. 4-2 and 4-5. The park was under construction in April, 1995. The modeling showed that windblown fugitive dust, almost all from area that had been cleared for the park (disturbed cleared area) was single largest contributor to the April 9, 1995 exceedance. See Table II-5. The background concentration for this site is 90 g/m³. (Plan, p. 18). The reduction needed for attainment, net of background, is 86 percent.⁷

Table II-5

Source Contribution to the Maryvale Maximum Concentration

April 9, 1995

Source Type	Predicted PM-10 Impacts (g/m ³)	Percent Contribution to Maximum Impact
Disturbed Cleared Area	414.3	99.4
Paved and Unpaved Roads	2.7	0.6
Total (without background)	416.0	100

Source: Plan, Appendix A, pp. 5-8 and 5-10.

4. Salt River Site

The Salt River monitor is located on the grounds of the City of Phoenix's Salt River Service Center Yard in south Phoenix. The site is surrounded by a number of industrial operations (including pre-cast concrete manufacturing and sand and gravel operations), landfills (the 19th Avenue Landfill superfund site and e 27th Avenue Landfill), and other fugitive dust sources such as unpaved parking lots and roads. See Plan, Appendix A, pp. 6-3 and 6-4. The site has recorded 16 exceedances of the 24-hour standard in 1995. See Table II-1.

The modeling showed that fugitive dust from earth moving activities at 19th Avenue Landfill was the single largest contributor to the October 16, 1995 exceedance. Fugitive dust from unpaved parking lots, industrial haul roads and other unpaved roads also contributed significantly to the exceedance. See Table II-6. The fugitive dust from the 19th Avenue Landfill was the result of not watering to the depth of the cut during earth moving activities. Plan, p. 16. The background concentration for this site is 78.3 g/m³. Plan, p. 17. The reduction needed for attainment net of background is 19 percent.⁸

Table II-6

Source Contribution to the Salt River Exceedance

October 16, 1995

Source Type	Predicted PM-10 Impacts (g/m ³)	Percent Contribution to Maximum Impact
Earth Moving Activities	50.8	57.1
Unpaved Parking	12.6	14.2
Industrial Haul Roads	10.4	11.7
Unpaved Roads	5.1	5.7
Paved Roads	3.6	4.0
Surface Mining	2.7	3.0
Industrial Yard Activities	2.4	2.7
Industrial Other	1.0	1.1
Track Out	0.3	0.3
Paved Parking	0.1	0.1
Total (without background)	89.0	100

Source: Plan, Appendix A, pp. 7-20.

D. East Chandler Site

The East Chandler site is one of the five monitoring sites that needed to be analyzed in the microscale plan. The site, however, was not evaluated because reliable information on the sources surrounding the monitor was not available. Plan, p. 16.

The modeling evaluation of 24-hour PM-10 exceedances caused by fugitive dust is very dependent on precise information about dust-raising activities around the site on the exceedance day. See, for example, the detailed inventory development for the Salt River monitor in the Plan, Appendix A, Chapter 6. Without good information on sources potentially contributing to the exceedance, relative source contributions to the exceedance cannot be determined and the control strategy needed for attainment cannot be developed.

From the information that is available about the East Chandler site, it appears that exceedances there have similar causes to those at the modeled West Chandler site, that is, they are related to windblown dust during high winds from a mix of urban and agricultural sources. See facsimiles, Randy Sedlacek, ADEQ, to Frances Wicher, EPA, May 21, 1997 (found in the docket). The Gilbert site also had similar source characteristics. Plan, Appendix A, p. 4-7. Therefore, RACM/BACM implemented for the West Chandler and Gilbert sites would also contribute to emission reductions at the East Chandler site. There will be no further reference to this site in this TSD.

III. Evaluation of Proposed Control Strategy and the Attainment and RFP Demonstrations

A. Criteria for Approval

1. RACM Requirement

CAA sections 172(c)(1) and 189(a)(1)(C) of the CAA require moderate area PM-10 plans to assure that reasonably available control measures (RACM) including such reductions in emissions from existing sources in the area as may be obtained through the adoption, at a minimum, of reasonably available control technology (RACT) will be implemented no later than December 10, 1993. The moderate area plan with RACM was due November 15, 1991. See CAA section 189(a)(2)(A).

The deadlines for adopting and implementing RACM/RACT in the Maricopa area have long passed; however, the requirement that the PM-10 plan include such measures remains. See *General Preamble* at 13537. Once a statutory deadline has passed and has not been replaced by a later one, the deadline then becomes as soon as possible. *Delaney v. EPA*, 898 F.2d 687, 691 (9th Cir. 1990). Therefore, since the moderate area deadline for the implementation of RACM/RACT has passed, the RACM/RACT required in the State's microscale plan must be implemented as soon as possible.

The methodology for the determination of RACM/RACT is described in the *General Preamble* at 13540-13541. In summary, EPA suggests starting to define RACM with the list of available control measures for fugitive dust, residential wood combustion, and prescribed burning contained in Appendices C1, C2, and C3 of the *General Preamble* and adding to this list any additional control measures proposed and documented in public comments. The state can then cull from the list any measures for insignificant emission sources of PM-10 and any measures that are

unreasonable for technological or economic reasons. The *General Preamble* does not define insignificant except to say that it would be unreasonable to apply controls to sources that are negligible (“de minimis”) contributors to ambient concentrations. *General Preamble* at 13540. However, EPA’s serious area plan guidance does define a “significant contributor” source category as one that contributes 5 g/m³ or more of PM-10 to a location of expected 24-hour violation. See *Addendum* at 42011. For evaluating the microscale plan only, EPA is proposing to use this same definition to determine which sources categories require the application of RACM.

For any RACM that are rejected by the state, the plan must provide a reasoned justification as to why the measure has been rejected. Once the final list of RACM is defined, each RACM must be converted into a legally enforceable vehicle such as a rule, permit, or other enforceable document. *General Preamble* at 13541. In addition, consistent with section 110(a)(1) of the Act, each selected RACM/RACT must include a schedule for compliance providing for implementation as soon as possible.

For the microscale plan, RACM are to be identified, documented, and realistically evaluated for effectiveness for contributing sources to each modeled exceedance. See Marcus letter. Evaluation of RACM in the microscale plan is limited to controls for sources that are contributing significantly and directly to the localized violations rather than to sources contributing to background PM-10 levels. A full analysis of RACM for sources that contribute significantly to PM-10 levels in the Maricopa County nonattainment area but are not directly implicated in the localized violations is to be conducted as part of the regional serious area plan, due December 10, 1997.

2. BACM Requirements

For serious areas, section 189(b)(1)(B) requires plans to assure that the best available control measures (BACM) (including such reductions in emissions from existing sources in the area as may be obtained through the adoption, at a minimum, of best available control technology (BACT)) for the control of PM-10 shall be implemented no later than 4 years after the area is reclassified. The Maricopa area’s reclassification was effective June 10, 1996 (61 FR 21372); therefore, BACM are due by December 10, 1997 and must implemented no later than June 10, 2000.

The *Addendum* defines BACM as the “maximum degree of emission reduction of PM-10 and PM-10 precursors from a [significant] source [category] which is determined on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, to be achievable for such sources through application of production processes and available methods, systems, and techniques....” See *Addendum* at 42010. BACM is to be applied to each significant area-wide source category and large individual stationary source. See *Addendum* at 42010, footnote 33. A “significant contributor” source category is defined as one that contributes 5 g/m³ or more of PM-10 to a location of expected 24-hour violation. See *Addendum* at 42011.

The state must document its selection of BACM by showing what control measures applicable to each significant source category were considered. See *Addendum* at 42014. BACM should go beyond existing RACM controls and can include expanded use of RACM controls (e.g., paving more miles of unpaved roads). See *Addendum* at 42013. Additionally, BACM should emphasize prevention where possible over remediation. See *Addendum* at 42013.

For the microscale plan, BACM is to be identified, documented, and realistically evaluated for effectiveness for sources contributing to each modeled exceedance. See

Marcus letter. Evaluation of BACM in the microscale plan is limited to controls for sources that are contributing significantly and directly to the localized violations rather than to sources contributing to background PM-10 levels. A full analysis of BACM for sources that significantly contribute to PM-10 levels in Maricopa County nonattainment area but are not directly implicated in the localized violations is to be conducted as part of the regional serious area plan, due December 10, 1997.

3. RACM/BACM for Sources of PM-10 Precursors

CAA section 189(e) states that the control requirements applicable under PM-10 plans for major stationary sources of PM-10 are also applicable to major stationary sources of PM-10 precursors (such as NO_x and SO_x sources, except where EPA determines that such sources do not contribute significantly to PM-10 levels. See *General Preamble* at 13541-13542. "Significant" is not defined in the *General Preamble* rather, for moderate areas, the determination is to be made on a case-by-case basis. *General Preamble* at 13539. For serious areas, a "significant" source category is defined as one that contributes 5 g/m³ or more of PM-10 to a location of expected 24-hour violation. See *Addendum* at 42001. For this rulemaking only, EPA is proposing to apply the serious area definition to both the RACT and BACT necessity determinations.

4. SIP Approval of Control Measures

To determine whether a measure can be approved into the SIP, the most important question that needs to be answered is whether the measure is enforceable in practice. This is a question of how clearly and completely the measure is written. Is it clear about which sources are subject to it? Is it clear what limits a source must comply with and/or what actions a source must take? Is it clear how compliance is demonstrated? EPA has developed guidance on reviewing a proposed SIP for enforceability and legal sufficiency. See memorandum and its attachment from J. Craig Potter, Assistant Administrator for Air and Radiation; Thomas L. Adams, Jr., Assistant Administrator for Enforcement and Compliance Monitoring; and Francis S. Blake, General Counsel to Addressees. "Review of State Implementation Plans and Revisions for Enforceability and Legal Sufficiency." September 23, 1987. (Potter memorandum). This detailed guidance is most applicable when the SIP revision is a rule or regulation; however, the general principles of clarity and completeness articulated in the Potter memorandum are applicable to other types of SIP control measures.

The second question that must be answered before a SIP revision can be approved is whether the measure meets all statutory and EPA guidance directly applicable to it. An example is RACT measures for volatile organic compound (VOC) sources. The CAA establishes specific requirements for such measures (e.g., must apply to all major sources, see section 182(b)(2)(C)) and EPA guidance establishes minimum emission standards and monitoring requirements. Thus a SIP revision for VOC RACT measures must also be reviewed for compliance against these requirements.⁹

The third question that must be answered is found in section 110(l), the Act's anti-backsliding provisions.¹⁰ Section 110(l) states that the "Administrator shall not approve a revision of a plan if the revision would interfere with any applicable requirement concerning attainment and reasonable further progress ... or any other applicable requirement of this Act."

Once a measure is determined to be enforceable, the next issue is what emission reduction credit to give it in an attainment and/or RFP demonstration. Creditability of emission reductions depends on the permanence of the emission reduction, accuracy of the emission

reduction estimate, and the quality of the underlying compliance assurance/enforcement program. The latter is a question of the authorities, resources, and compliance program available to implement the measure, ensure compliance with its requirements, and track its effect. CAA section 110(a)(2)(E)(i) requires SIPs to provide necessary assurances that the state (or the general purpose local government) will have adequate personnel, funding and authority under State law to implement the submitted SIP.

5. Attainment Demonstrations

As a serious nonattainment area for PM-10, the attainment date for the Maricopa area is as expeditiously as practicable but no later than December 31, 2001. See CAA sections 188(c)(2) and 189(b)(1)(A). Therefore, the microscale plan must demonstrate attainment of the 24-hour PM-10 standard at each of the five monitoring sites as expeditiously as practicable but no later than December 31, 2001. See Marcus letter.

6. RFP Demonstration/Quantitative Milestone

CAA section 189(c) requires PM-10 moderate and serious area nonattainment SIPs demonstrating attainment to include quantitative milestones to be achieved every three years until the area is designated attainment and demonstrate RFP toward attainment by the applicable date. EPA has addressed these requirements in the *General Preamble* at 13539, the *Addendum* at 42015-42017, and the memorandum from Sally Shaver, EPA, to EPA Division Directors, "Criteria for Granting 1-Year Extensions of Moderate PM-10 Nonattainment Area Attainment Dates, Making Attainment Determinations, and Reporting on Quantitative Milestones," November 14, 1994 (Shaver memorandum) found in the docket. Of these guidance documents, the most comprehensive is the *Addendum* which discusses both the RFP annual incremental reduction requirement and the appropriate interpretation of the milestone requirement as it relates to moderate areas that have been reclassified to serious.

For the RFP requirement, EPA determined that SIPs must indicate the annual emission reductions that correspond to the compliance schedules for the control measures in the plan. EPA then has considerable discretion in reviewing the SIP to determine whether the annual incremental emission reductions to be achieved are reasonable in light of the statutory objective of timely attainment. Addendum at 42015.

For the quantitative milestone requirement, for initial moderate areas (such as the Maricopa area), EPA concluded that the SIP should initially address at least two milestones and that the starting point for the first 3-year period would be the SIP submittal due date, i.e. November 15, 1991. EPA further concluded that since the time lag between that date and the December 31, 1994 attainment deadline was de minimis, emission reduction progress made between the submittal date and the December 31, 1994 would satisfy the first milestone. The second milestone to be addressed by these initial moderate area SIPs was November 15, 1997. General Preamble at 131539, Addendum at 42016, and Shaver memorandum. For moderate areas that are reclassified as serious, the third milestone achievement date is November 15, 2000. Addendum at 42016. The quantitative milestones should consist of elements that allow progress to be quantified or measured, e.g., percent compliance with implemented control measures. Addendum at 42016.

EPA will assess whether an area has achieved RFP in conjunction with determining compliance with the quantitative milestone requirement. Thus a state should address compliance with both requirements in its RFP/milestone reports. The contents of these reports is

discussed in the General Preamble, its Addendum, and the Shaver memorandum.

Since the *Ober* court found that Arizona had failed to submit a moderate area SIP addressing the 24-hour PM-10 standard in 1991 and the regional plan addressing both the moderate and serious area requirements for both PM-10 NAAQS is now due on December 10, 1997, EPA believes that it is reasonable to conclude, by applying the de minimis reasoning above, that the November 15, 1997 milestone can be satisfied by the December plan submittal. Therefore, the microscale plan need not address the CAA section 189(c)(1) quantitative milestone requirement and it is not discussed further in this TSD.

B. Evaluation of State Submittal

1. RACM/BACM Analysis

a. Maryvale Site

As shown in Table II-5 above, the only significant source of PM-10 (defined as an impact of 5 g/m³ or more) at the Maryvale site is a disturbed cleared area (a park under construction).¹¹ The microscale plan includes a list of potential control measures for this category including gravel on unpaved areas, wind fences, chemical stabilizers, watering to maintain adequate soil moisture, and water to maintain a crust. See Plan, p. 22. The latter four were determined to be applicable to the Maryvale situation. See Plan, page 26. (Since the site was cleared for planting grass and other landscaping, covering it with gravel was not reasonable for this site, although for other situations gravel cover may be appropriate.) This source category is also subject to MCESD's Rule 310, Open Fugitive Dust Sources. See Rule 310, section 221 (definition of RACM), 302 (dust generating operations - permits required), 303 (control plans), and 308 (disturbed surface areas). A more detailed description of RACM for disturbed cleared areas is found in Rule 310's revised dust control plan checklist. See Plan, p. 34. These measures include EPA's suggested RACM for this source category. See *General Preamble*, Appendix C1.

The microscale plan also identifies enhancements to these RACM controls including making permit holders aware of the importance of preventing wind-blown dust even when areas are inactive and of the requirement to stabilize disturbed areas at all times. For large sites, the microscale plan also recommends making permit holders aware that reducing the amount of area that is disturbed reduces the cost of stabilization (and thus encourages them to plan their projects to minimize the amount of disturbed area at one time) and the potential need to apply more stringent dust control requirements. See Plan, pp. 27 - 28 and 34 (revised dust control checklist). These types of enhancements meet EPA's guidance for BACM by going beyond existing RACM controls, expanding the use of RACM controls, and emphasizing prevention over remediation.

b. Salt River Site

As shown in Table II-6 above, the significant sources of PM-10 (defined as an impact of 5 g/m³ or more) at the Salt River site is earth moving activities, unpaved parking lots, industrial haul roads, and unpaved roads. See also footnote 11 of this TSD. All these source categories are subject to the RACM requirements in Rule 310. See Rule 310, sections 221 (definition of RACM), 302 (dust generating operations - permits required), 303 (control plans), 306 (unpaved parking areas), 307 (unpaved haul/access roads), and 312 (roadways, streets, and alleys). The revised dust control plan checklist provides a more detailed description of RACM for these

categories. See Plan, p. 34. The microscale plan also includes a list of controls for earth moving and unpaved parking lots,¹² many of which duplicate existing RACM. See Plan, pp. 21 and 22. These measures include EPA's suggested RACMs for this source category. See *General Preamble*, Appendix C1.

Activities within the industrial yard, other industrial activities, and surface mining categories at the Salt River site area also subject to MCESD's Rule 311 (Particulate Matter from Process Industries) and Rule 316 (Nonmetallic Mineral Mining and Processing). None of these categories were determined to be significant. See Plan, p. 17.

The microscale plan also identifies an enhancement to RACM for earth moving operations. This enhancement requires watering to the depth of the cut. See Plan, page 23 and page 38 (revised dust control plan checklist). This type of enhancement meets EPA's guidance for BACM by going beyond existing RACM controls, expanding the use of RACM controls, and emphasizing prevention over remediation. The microscale plan does not explicitly identify BACM for unpaved parking lots, industrial haul roads, and unpaved roads although clarifications to Rule 310 to make permit holders aware of the importance of preventing wind-blown dust even when areas are inactive and of the requirement to stabilize disturbed areas at all times should improve control on these types of sources when they are located at permitted facilities.

c. Gilbert Site

As shown in Table II-4 above, the significant sources of PM-10 (defined as an impact of 5 g/m³ or more) at the Gilbert site are agricultural aprons, unpaved parking lots, and disturbed cleared areas. See also footnote 11 of this TSD. All these source categories are subject to the RACM requirements in Rule 310.¹³ See Rule 310, sections 221 (definition of RACM), and 306 (unpaved parking areas). The microscale plan also includes a list of potential control measures for these category. See Plan, page 22. These measures include EPA's suggested RACMs for this source category. See *General Preamble*, Appendix C1.

The recommended enhancements to RACM for these categories are improved enforcement of Rule 310 and improvements to the handbook for Rule 310 and the dust control plan. See Plan, p. 23. These types of enhancement meet EPA's guidance for BACM by going beyond existing RACM controls, expanding the use of RACM controls, and emphasizing prevention over remediation. The microscale plan also includes development of a partnering process with the U.S. Natural Resources Conservation Service (NRCS) to address fugitive dust on agricultural lands including field aprons (see Plan, page 36) and with the local jurisdictions in Maricopa County to address unpaved parking (Plan, p 35); however, no potential controls are identified for these sources, nor is there any analysis as to why controls are not available.

d. West Chandler Site

As shown in Table II-3 above, the significant sources of PM-10 (defined as an impact of 5 g/m³ or more) at the West Chandler site are agricultural fields, road construction (disturbed cleared areas), vacant areas, and agricultural aprons. See also footnote 11 of this TSD. All these source categories are subject to the RACM requirements in Rule 310. See Rule 310, sections 221 (definition of RACM), 302 (dust generating operations - permits required), 303 (control plans), 305 (vehicle use in open areas and vacant parcels), 309 (vacant areas), and 312 (roadways, streets, and alleys). See also footnote 13 of this TSD. The microscale plan also includes a list of potential control measures for these category. See Plan, pp. 21-23. These measures include EPA's

suggested RACMs for these source categories except for agricultural fields. See *General Preamble*, Appendix C1.

The recommended enhancements to RACM for these categories are similar to those recommended for Gilbert and Maryvale. See Plan, p. 28. These types of enhancement meet EPA's guidance for BACM by going beyond existing RACM controls, expanding the use of RACM controls, and emphasizing prevention over remediation. The microscale plan also includes development of a partnering process with the NRCS to address fugitive dust on agricultural lands including field aprons (see Plan, page 36) and with the local jurisdictions in Maricopa County to address unpaved parking and vacant land (Plan, p 35); however, no potential controls are identified for these sources, nor is there any analysis as to why controls are not available.

e. PM-10 Precursors

It is clear from the modeling that primary-emitted PM-10 (i.e., fugitive dust) is the only significant contributor to the 24-hour PM-10 exceedances at the four monitoring sites. Based on this evidence, EPA is proposing to determine under section 189(e) that sources of PM-10 precursors do not contribute significantly to PM-10 levels that exceed the 24-hour standard at the Gilbert, East Chandler, Maryvale, and Salt River monitors and therefore no RACT/BACT controls are not necessary for these sources. This finding, if finalized, is applicable only to the microscale plan and will need to be reevaluated for the full regional plan.

2. RACM/BACM Adoption and Implementation

a. RACM/BACM Adoption

i. *Rule 310*

The primary conclusion of the air quality modeling is that 24-hour PM-10 exceedances at the four evaluated sites are related solely to fugitive dust. The eight source categories of fugitive dust identified as significant at one or more monitoring sites are regulated in whole or in part by MCESD's Rule 310 (Open Sources of Fugitive Dust). These categories are disturbed cleared areas, earth moving, unpaved parking lots, unpaved roads, industrial haul roads, vacant land, agricultural field aprons, and agricultural fields.

Rule 310 requires the application of reasonably available control measures to open sources of fugitive dust. RACM is defined in the Rule (section 221) and is detailed on the dust control plan checklist and in the Rule 310 handbook "A Guide for Reducing Air Pollution from Construction." The microscale plan includes proposed revisions to the checklist and handbook to reflect BACM. Plan, Appendix E. These revisions to the checklist and handbook include many of the BACM identified in the plan such as making clear the dust control plan must be implemented throughout the life of the project until all roads and disturbed areas are stabilized and requiring water to the depth of the cut.

Rule 310 was adopted by Maricopa County in 1988, substantially revised in 1993, and revised again in 1994. The Rule was initially submitted to EPA in 1994 as part of the moderate area PM-10 plan for the Maricopa area, and EPA approved the Rule on April 10, 1995 (60 FR 18010) in conjunction with the approval of the overall moderate area plan. EPA's approval of this plan was subsequently vacated by the Ninth Circuit in *Ober v. EPA*. Although the court's opinion did not address the SIP approvability of Rule 310, its disposition had the incidental effect of also

vacating EPA's approval of Rule 310.

In its 1994 proposed approval of the overall PM-10 moderate area plan, EPA found that Rule 310 met the enforceability requirements and proposed to approve the rule except for a "director's discretion" provision.¹⁴ See 59 FR 38402 (July 28, 1994). Several comments questioning the enforceability of Rule 310 were received on the proposal and were fully responded to in the final notice. See 60 FR 18018. Neither the rule nor EPA's finding that the rule met the SIP enforceability criteria has changed since the April, 1995 approval; therefore, EPA is reaffirming its previous finding that Rule 310 meets the requirements of CAA sections 110(a)(1) and 172(c)(6) for enforceable emission limitations. As a result, EPA is proposing to reapprove Rule 310 as an element of the Arizona SIP for the Maricopa PM-10 nonattainment area.

ii. Rules 311 and 316

Individual point sources (e.g., several concrete manufacturers and sand and gravel operations) whose emissions are accounted for within several of the source categories at the Salt River site are also covered by MCESD's Rule 311 (Particulate Matter from Process Industries) and Rule 316 (Nonmetallic Mineral Mining and Processing). These rules were also approved by EPA as RACT for PM-10 sources as part of the approval of the moderate area plan. 60 FR 18009. While not at issue in the litigation regarding that plan's approval, EPA's approval of these rules was also incidentally vacated by the *Ober* decision. EPA, therefore, will be restoring its approval of these rules in its final action on today's proposal.

b. RACM/BACM Implementation

i. MCESD Commitments

Implementation of Rule 310. Rule 310 requires that an earth moving permit be obtained prior to engaging in any commercial, industrial or institutional earth moving or dust generating operations that disturbs a total surface area of 0.10 acres or more. See Rule 310, section 302 (dust generating operations - permits required). A dust control plan must be submitted with the permit application. See Rule 310, section 303 (control plans). Earth moving permits must be renewed every year. See Rule 200 (Permit Requirements), section 305.4. No permit is required for other fugitive dust sources regulated by Rule 310 such as unpaved parking lots, unpaved roads,¹⁵ vacant lots, agricultural aprons, and agricultural fields.

To help permit applicants develop dust control plans, MCESD has developed a general dust control plan that list RACM by category (e.g., earth moving, disturbed surface areas). Permit applicants can simply check off the RACM they will use, but must check off at least one measure per category. Plan, p. 34. Alternatively, applicants may craft their own dust control plan provided it meets the requirements of Rule 310. Plan, p. 34.

Review of earth moving permit applications and dust control plans as well as the inspection of permitted earth moving sites is done primarily by the Earthmoving/Burn Permit Coordinator.¹⁶ Inspections are conducted for all projects greater than 10 acres in size and smaller operations are inspected based on several factors including the compliance history of the contractor/developer or complaints. Some inspections are performed by the Department's regional offices when time allows. Plan, Appendix B, p. 2-5. MCESD inspectors also note earth moving operations when they are out in the field and stop to check if the required permit is posted. Plan, Appendix G, p. 18. Historically, stationary sources have not been inspected for Rule 310 violations even when they have

fugitive dust sources subject to the rule.¹⁷ Plan, Appendix B, p. 2-5.

MCESD only inspects sources that do not require permits (such as vacant land and unpaved parking lots) on a complaint bases and has no proactive inspection or compliance assurance program for these types of sources. See Plan, page 12.

The microscale plan identifies a number of recommended changes to improve implementation of Rule 310 including clarifications to the dust control plan and implementation guide and improvements in inspection and enforcement. Plan, Appendix B, Chapter 5. MCESD has or will undertake a number of internal program changes to implement these changes and will lead a regional program to foster interagency cooperation to reduce particulate pollution. A list and complete description of these commitments can be found in the Plan, Appendix E, Bell letter. MCESD's commitments clearly identify the actions required and the deadlines for those actions and EPA proposes to approve them as elements of the Arizona SIP.

Some of the internal program modifications the Department has already made are revising a number of documents that support implementation of Rule 310 including the dust control plan, the Rule 310 handbook, the guideline for earth moving inspection checklist, and the standard operating procedures (SOP) for earth moving permit application processing and site inspection. In addition, MCESD is revising the SOP for air pollution inspection procedures.¹⁸ Plan, Appendix E, Bell letter. Other changes include updating staff training on Rule 310 (target completion date: May 31, 1997), initiating a weekend inspection program for Rule 310 sources (target date: May, 1997), and linking the earth moving permit, complaint, and enforcement databases to improve access to information on permitted sources (target completion date: February, 1998). Plan, Appendix E, Bell letter. A complete description of MCESD's commitments can be found in the Plan, Appendix E, Bell letter.

MCESD has also committed to a regional program to foster interagency cooperation including designating a MCESD staff person as a coordinator, holding Rule 310 workshops for cities and contractors, creating material on Rule 310 for distributing to City/County staff and contractors, continuing to conduct workshops in 1997 on studying and improving the current dust control program, expanding public awareness programs for particulate pollution, and publicizing MCESD's public complaint line number. The regional program will be fully implemented in 1997. A complete description of MCESD's commitments can be found in the Plan, Appendix E, Bell letter.

Resources for Rule 310 Implementation. MCESD will continue to implement Rule 310 through a program of reviewing and evaluating dust control plans, inspection of sources with earth moving permits, and responding to complaints. The Earthmoving/Burn Permit Coordinator has primary responsibility for reviewing dust control plans and inspections and is aided in inspections by four dedicated stationary source inspectors in the main office. In addition, MCESD has recently hired a public involvement coordinator and an assistant to the Earthmoving/Burn Permit Coordinator. Finally, the Department's Small Business Assistance Program also assists in implementing Rule 310 through outreach and compliance assistance. Plan, Appendix E, Bell letter.

Complaints are handled by the appropriate regional office. Each regional office has one supervising inspector and two staff inspectors. The regional offices also do earth moving inspections as time allows during the summer months. These non-complaint inspections are limit to permitted sites from 5 to 10 acres. Plan, Appendix B, pp. 2-4 and 2-5.

In all, there are 1.75 full time equivalent (FTE) positions working directly on

Rule 310 implementation, plus the Department has 19 inspectors, aides, engineers, and supervisors available to perform field observations and respond to complaints. Plan, Appendix E, Bell letter. This level of staffing (when combined with the support from the rest of the Department's inspection staff) is sufficient to ensure implementation of Rule 310 at the level assumed and committed to in the microscale plan, that is, a reasonable level of implementation on permitted sources but minimal implementation on nonpermitted sources.¹⁹

ii. City Resolutions

The microscale plan includes resolutions adopted by the Cities of Phoenix, Tempe, Chandler, Glendale, Scottsdale, and Mesa and the Town of Gilbert (collectively, city or the cities). Plan, Appendix E, "Resolutions Adopted by Various Cities and Towns within Maricopa County" (resolutions). The resolutions commit each city to participate in a regional program led by MCESD to foster interagency cooperation to reduce particulate pollution. This participation requires the city to 1) designate a staff person to coordinate the city's participation in the regional dust control program, 2) participate in workshops (to be held by MCESD) to study current dust control programs and to evaluate options for additional efforts, 3) distribute MCESD information on dust control to grading and certain building permit applicants, 4) ensure appropriate city personnel receive training on Rule 310 requirements, and 5) distribute information on particulate pollution to the public. The resolutions do not commit the cities to adopt any additional dust control requirements.

The cities will undertake these actions using current staffing and funding. Plan, p. 35 and Appendix E, resolutions. Because these actions are easily integrated into on-going city activities, these staffing and funding levels are adequate to implement the commitments. MCESD has complemented the cities' efforts by committing to designate a staff person as the regional program coordinator, to hold workshops, develop material for distribution, and provide training on Rule 310. Plan, Appendix E, Bell letter.

The commitment to address fugitive dust is an important additional step by the cities to help solve Maricopa's PM-10 problem in the long term.²⁰ The air quality modeling clearly shows that fugitive dust from nonpermitted sources such as vacant lands, unpaved parking lots, and unpaved roads are significant contributors to exceedances. Given the size of the Maricopa PM-10 nonattainment area and MCESD's limited resources, the cities and towns will need to take a more active role in reducing fugitive dust from these nonpermitted sources.

The cities' resolutions clearly identify the actions required and the deadlines for those actions and thus constitute enforceable commitments. As such, EPA proposes to approve them into the Arizona SIP for the Maricopa PM-10 nonattainment area.

iii. Agricultural Sources

As discussed previously, the air quality modeling demonstrated that control of fugitive dust from agricultural fields and field aprons is necessary for attainment of the 24-hour PM-10 standard at the Gilbert and West Chandler sites. Rule 310, while nominally applicable to agricultural sources, is not in general enforced against them. Plan, p. 31. See also footnote 17 of this notice. The microscale plan contains no controls for these source categories but does include an agreement by ADEQ, MCESD, and the federal Natural Resources Conservation Services (NRCS) to develop a protocol to address fugitive dust on agricultural land and refine roles, objectives and schedule. Plan, p. 36 and Appendix E, "Agreement of ADEQ, U.S. NRCS, and MCESD" (NRCS agreement).

EPA appreciates the agreement of the three agencies to develop a protocol to address fugitive dust from agricultural sources and fully supports this effort. However, given the impact of these sources on PM-10 levels in the Maricopa area, it is important that the protocol and the work that follows it are focused on getting appropriate RACM and BACM measures in place by the applicable deadlines.

v. Proposed Finding on RACM/BACM Implementation

There are eight source categories of fugitive dust identified in the microscale plan as significant at one or more monitoring sites: disturbed cleared area, earth moving, unpaved parking lots, unpaved roads, industrial haul roads, vacant land, agricultural field aprons, and agricultural fields.²¹ See Plan, pp. 17 - 19. These sources divided into three categories. In the first category are sources subject to permitting under Rule 310: disturbed cleared area, earth moving, and industrial haul roads.²² In the second category are sources that are not subject to permitting under Rule 310 (i.e., nonpermitted sources): unpaved parking lots, unpaved roads, and vacant land. Finally, the third category is the two sources that are essentially unregulated at this time by Rule 310: agricultural fields and field aprons.

As discussed above, MCESD has an adequate implementation strategy for dealing with permitted sources including review and approval of dust control plans and proactive inspections and has sufficient resources to carry out the strategy. The Department adopted Rule 310 in 1994 and is already implementing and improving the program. See Plan, pp. 10 - 12. The BACM improvements to the Rule 310 program as well as all the other commitments in the microscale plan will be fully implemented within one year of submittal of the final plan, with many being implemented by within one or two months. See Plan, pp. 32-36. EPA, therefore, is proposing to find that the microscale plan assures implementation of RACM as expeditiously as practicable and BACM within four years as required by CAA sections 189(a)(1)(C) and 189(b)(1)(B) for the significant source categories permitted by Rule 310: disturbed cleared area, earth moving, and industrial haul roads. EPA is proposing to approve the RACM/BACM demonstrations for these source categories. This proposed finding is applicable only to the microscale plan and thus, if finalized, will not constitute EPA's final decision as to the State's full compliance with the requirements of CAA sections 189(a)(1)(C) and 189(b)(1)(B) for RACM and BACM for these source categories. The State will need to re-evaluate appropriate RACM and BACM for these sources in the full regional plan.

For nonpermitted sources, MCESD's seeks compliance with Rule 310 only when complaints are received. Plan, p. 12. MCESD has adopted RACM controls for these sources in Rule 310 and is committed along with the cities that adopted resolutions to evaluate options to reduce particulate from vacant lands and parking areas. See Plan, Appendix E, Bell Letter. The microscale plan, however, provides no assurances that RACM and/or BACM will actually be implemented for these sources at meaningful levels nor is there any analysis as to why implementation of such controls would be unreasonable. As a result, the microscale plan does not claim any credit in the attainment demonstrations for these nonpermitted sources. See Plan, pp. 37-40. EPA, therefore, is proposing to find that the microscale plan does not assure implementation of either RACM or BACM as required by CAA sections 189(a)(1)(C) and 189(b)(1)(B) and to disapprove the RACM/BACM demonstration for the unpaved parking lots, unpaved roads, and vacant land source categories. This proposed finding is applicable only to the microscale plan and thus, if finalized, will not constitute EPA's final decision as to the State's full compliance with the requirements of CAA sections 189(a)(1)(C) and 189(b)(1)(B) for RACM and BACM for these source categories. The State will need to re-evaluate appropriate RACM and BACM for these sources in the

full regional plan.

As discussed above, there are currently no effective controls on agricultural sources in the Maricopa area. The microscale plan provides for the development of a partnership to identify appropriate controls but does not contain any actual controls nor is there any analysis as to why such controls would be unreasonable. EPA is, therefore, also proposing to find that the microscale plan does not assure implementation of either RACM or BACM as required by CAA sections 189(a)(1)(C) and 189(b)(1)(B) and to disapprove the RACM/BACM demonstration for these sources. This proposed finding is applicable only to the microscale plan and thus, if finalized, will not constitute EPA's final decision as to the State's full compliance with the requirements of CAA sections 189(a)(1)(C) and 189(b)(1)(B) for RACM and BACM for these source categories. The State will need to re-evaluate appropriate RACM and BACM for these sources in the full regional plan.

3. Attainment and RFP Demonstrations

a. Salt River Site

As discussed above, attainment of the 24-hour PM-10 standard at the Salt River site requires additional controls for earth moving activities, specifically watering to the depth of the cut or other equivalent techniques, in addition to the existing control provided by Rule 310. Plan, p. 37. These earth moving activities are subject to permitting under Rule 310. MCESD will revise its dust control plan checklist to clarify the earth moving requirement in May, 1997, and will begin including the requirement in all new earth moving permits and permit renewals by June 1, 1997. Plan, Appendix E, Bell letter. Permit renewals are required annually, thus full implementation and attainment will occur within one year of the submittal of the final plan. Plan, p. 38.

Attainment is predicted based on acceptable air quality modeling. EPA will be restoring its approval of Rules 311 and 316. EPA is also proposing to reapprove Rule 310 and to approve the additional controls assumed in the attainment demonstration. Finally, EPA is also proposing to find that MCESD has adequate resources, personnel, and authority to assure implementation of the measures required for attainment at this site. EPA is, therefore, proposing to approve the attainment demonstration at the Salt River monitor.

Reasonable further progress is defined in CAA section 171(1) as "such annual incremental reductions in emissions of the relevant air pollutant as...may be reasonably be required by the Administrator for the purposes of ensuring attainment of the applicable [NAAQS]." Because attainment will occur within one year of final plan submittal, the RFP and attainment demonstrations at this monitor are the same; that is the annual increment needed for progress toward attainment is the same as the emission reduction needed for attainment. Therefore, EPA is also proposing to approve the RFP demonstration at this monitor.

This proposed approval is applicable only to the microscale plan and thus, if finalized, will not constitute EPA's final decision as to the State's full compliance with the requirements of CAA sections 189(a)(1)(B) and (b)(1)(A) and 189(c)(1) for attainment and RFP demonstrations at the Salt River site. Because regional factors may influence attainment at this site, the State will need to re-evaluate modeling at this site as part of the full regional plan.

b. Maryvale Site

Attainment of the 24-hour PM-10 standard at the Maryvale site requires

stabilization of disturbed cleared areas at all times. Plan, p. 38. Disturbed cleared areas is a source category subject to permitting under Rule 310. In May, 1997, MCESD will revise its dust control plan checklist for Rule 310 to clarify the requirement to stabilize all disturbed areas at all times, and will begin including the requirement in all new earth moving permits and permit renewals by June 1, 1997. Plan, Appendix E, Bell letter. Permit renewals are required annually, thus full implementation and attainment will occur within one year of the submittal of the final plan. Plan, p. 38.

Attainment is predicted based on acceptable air quality modeling. EPA is proposing to reapprove Rule 310 and to approve the additional controls assumed in the attainment demonstration. Finally, EPA is proposing to find that MCESD has adequate resources, personnel, and authority to assure implementation of the measures to the extent required for attainment at this site. EPA is, therefore, proposing to approve the attainment demonstration at the Maryvale monitor.

Because attainment will occur within one year of final plan submittal, the RFP and attainment demonstrations at this monitor are essentially the same; that is the annual increment needed for progress toward attainment is the same as the emission reductions needed for attainment. Therefore, EPA is also proposing to approve the RFP demonstration at this monitor.

This proposed approval is applicable only to the microscale plan and thus, if finalized, will not constitute EPA's final decision as to the State's full compliance with the requirements of CAA sections 189(a)(1)(B) and (b)(1)(A) and 189(c)(1) for attainment and RFP demonstrations at the Maryvale site. Because regional factors may influence attainment at this site, the State will need to re-evaluate modeling at this site as part of the full regional plan.

c. Gilbert Site

The microscale plan does not demonstrate attainment or RFP at the Gilbert site because of uncontrolled fugitive dust emissions from agricultural aprons and unpaved parking lots. Plan, p. 38. As noted before, the microscale plan does include strategies to evaluate controls on these sources but, at this time, does not assure implementation of controls on these sources. EPA is, therefore, proposing to disapprove the attainment and RFP demonstrations for this site.

This proposed disapproval is applicable only to the microscale plan and thus, if finalized, will not constitute EPA's final decision as to the State's full compliance with the requirements of CAA sections 189(a)(1)(B) and (b)(1)(A) and 189(c)(1) for attainment and RFP demonstrations at the Gilbert site. Because regional factors may influence attainment at this site, the State will need to re-evaluate modeling at this site as part of the full regional plan.

d. The West Chandler Site

The microscale plan does not demonstrate attainment or RFP for the West Chandler site because of uncontrolled fugitive dust emissions from agricultural fields and aprons and vacant land. Plan, p. 39. As noted before, the microscale plan does include strategies to evaluate controls on these sources but, at this time, does not assure implementation of controls on these sources. EPA is, therefore, proposing to disapprove the attainment and RFP demonstrations for this site.

This proposed disapproval is applicable only to the microscale plan and thus, if finalized, will not constitute EPA's final decision as to the State's full compliance with the requirements of CAA sections 189(a)(1)(B) and (b)(1)(A) and 189(c)(1) for attainment and RFP

demonstrations at the West Chandler site. Because regional factors may influence attainment at this site, the State will need to re-evaluate modeling at this site as part of the full regional plan.

4. Section 110(l) Finding

CAA section 110(l) states that the “Administrator shall not approve a revision of a plan if the revision would interfere with any applicable requirement concerning attainment and reasonable further progress ... or any other applicable requirement of this Act.”

Pursuant to section 110(l) of the Act, EPA proposes to find that its proposed partial approval of the microscale plan does not interfere with any other requirements of the Act applicable to the Maricopa PM-10 nonattainment area including the requirements for attainment and RFP. In fact, the control measures and commitments in the plan are essential elements in the demonstrations of attainment and RFP for the area for the 24-hour PM-10 NAAQS and partially meet the statutory requirement for the adoption and implementation of RACM and BACM.

IV. General SIP Requirements

A. Completeness and Reasonable Notice and Public Hearing

1. Requirement

CAA section 110(k)(1) requires EPA to determine whether a SIP submission is “complete.” EPA has established completeness criteria in 40 CFR part 51, Appendix V.

CAA sections 110(a)(2) and 110(l) require that each SIP and SIP revision submitted by a state must be adopted after reasonable notice and public hearing. EPA has established regulations for public hearings in 40 CFR § 51.102. These regulations require at least 30 days notice of the public hearing.

2. Review of Submittal

EPA reviewed the State’s March 28, 1997 and May 9, 1997 submittals of the microscale plan and found them complete on May 23, 1997. See, Letter, David Howekamp, EPA, to Russell Rhoades, ADEQ, May 23, 1997. This finding includes the determination that the SIP was adopted after reasonable notice and public hearing. See completeness criteria in 40 CFR part 51, Appendix V.

B. Adequate Personnel, Funding, and Authority

1. Requirement:

Section 110(a)(2)(E)(i) of the Clean Air Act requires that implementation plan provide necessary assurances that the State (or the general purpose local government) will have adequate personnel, funding and authority under State law. Requirements for legal authority are further defined in 40 CFR part 51, subpart L (§ 51.230-232) and for resources in 40 CFR § 51.280. States and responsible local agencies must demonstrate that they have the legal authority to adopt and enforce provisions of the SIP and to obtain information necessary to determine compliance. SIPs must also describe the resources that are available or will be available to the State and local

agencies to carry out the plan, both at the time of submittal and during the 5-year period following submittal.

2. Review of Submittal:

Resources: For Rule 310, the microscale plan reflects MCESD's current bifurcated implementation strategy of proactive compliance assurance and enforcement on permitted sources and reactive enforcement on nonpermitted sources. This implementation strategy is assumed in the attainment demonstrations in which credits for emission reductions are assumed only from permitted sources and not from nonpermitted sources. Plan, pp. 37-40. MCESD's available resources (both personnel and funding) for carrying out this bifurcated strategy for Rule 310 and its other commitments are discussed above and are adequate. MCESD expects to maintain this level of resource commitment over the next five years of plan implementation. Plan, p. 33.

The Cities' resources for implementing their respective commitments are also discussed above and are adequate. Each agency is expect to maintain this level of resource commitment over the next five years of plan implementation. Plan, pp. 35 and 36.

Legal authority: The primary implementing agency of the controls in the microscale plan is the County of Maricopa through its Environmental Services Department. A.R.S. 49-479 provides that the board of supervisors "shall adopt such rules as it determines are necessary and feasible to control release into the atmosphere of air contaminants..." A.R.S. 49-476.01 provides the County control officer the authority to require sources to monitor, sample, or otherwise quantify their emissions and the board of supervisors the authority to adopt rules for source monitoring, sampling, etc. These sections provide the County and MCESD with sufficient authority under State law to adopt and enforce the proposed control measures and to obtain the information necessary to determine compliance.

Legal authority for the cities to adopt and implement their resolutions are described in the microscale plan on pp. 35 to 36 and appear to be adequate.

3. Conclusion: Approvable.

C. Description of the Enforcement Methods

1. Requirement

Section 110(a)(2)(C) requires SIPs to include a program to provide for the enforcement of SIP measures. The implementing regulation for this section is found at 40 CFR §51.111(a) and requires control strategies to include a description of enforcement methods including 1) procedures for monitoring compliance with each of the selected control measures, 2) procedures for handling violations, and 3) the designation of the agency responsible for enforcement.

2. Review of Submittal

Procedures for monitoring compliance (i.e., the inspection strategy) with Rule 310 are discussed in the section on MCESD commitments above. MCESD is the designated agency for enforcing Rule 310. See legal authority section above.

MCESD has developed an Air Enforcement Policy (April 4, 1997). A

summary of this strategy can be found in the microscale plan, Appendix E, Bell letter. Currently, the Department issues Notices of Violations (NOVs) whenever violations of rules are observed (Plan, p. 12) and will continue to do so. Orders of abatement will be issued after NOVs when compliance is not attainable within a reasonable time frame. Additional enforcement actions may be initiated based on several factors including actual or significant potential harm or willful non-compliance. The additional actions include filing criminal or civil complaints. Appropriate monetary penalties will be sought for criminal or civil complaints and the Department encourages Environmental Community Action Projects as part of settlements. Plan, Appendix E, Bell letter.

EPA has also encouraged MCESD to take more enforcement actions with monetary penalties in order to make clear to the regulated community that compliance with Rule 310 should be a priority and to develop a system for tracking the number of NOVs and monetary penalties. See letter, Frances Wicher, EPA, to Joe Gibbs, ADEQ, April 30, 1997 (found in the Plan, Appendix D). In all, the Department's Air Enforcement Policy is adequate to meet the requirements of 40 CFR § 51.111(a) and CAA section 110(a)(2)(C).

3. Conclusion: Approvable.

¹ There are two PM-10 NAAQSs, an annual standard of 50 g/m³ and an 24-hour standard of 150 g/m³.

² The original deadlines for submittal of the draft and final plans were extended to March 28, 1997 and May 9, 1997, respectively. See March 5, 1997 Marcus letter.

³ Exceptions have been made when the modeling domain chosen is demonstrated clearly, based on monitoring data and/or on lack of emissions sources outside the domain, to be the only area with exceedances.

⁴ The South Phoenix site was not included in the microscale plan because it did not record any 24-hour PM-10 exceedances in 1995. EPA's criterion for determining which sites were to be analyzed in the microscale plan was whether the site had recorded exceedances of the 24-hour NAAQS during 1995.

⁵ If χ is concentration, B=background, and N=NAAQS=150, this reduction needed for attainment is calculated from:

$$\frac{\{(\chi-B) - (N-B)\}}{\{\chi-B\}} \approx \frac{\{\chi - N\}}{\{\chi - B\}} \approx \frac{\{394 - 150\}}{\{314\}} \approx 0.78$$

⁶ If χ is concentration, B=background, and N=NAAQS=150, this reduction needed for attainment is calculated from:

$$\frac{\{(\chi-B) - (N-B)\}}{\{\chi-B\}} \approx \frac{\{213 - 150\}}{\{123\}} \approx 0.51$$

⁷ If χ is concentration, B=background, and N=NAAQS=150, this reduction needed for attainment is calculated from:

$$\frac{\{(\chi-B) - (N-B)\}}{\{\chi-B\}} \approx \frac{\{507 - 150\}}{\{417\}} \approx 0.86$$

⁸ If χ is concentration, B=background, and N=NAAQS=150, this reduction needed for attainment is calculated from:

$$\frac{\{(\chi-B) - (N-B)\}}{\{\chi-B\}} \approx \frac{\{167 - 150\}}{\{89\}} \approx 0.19$$

EPA does approve measures that purport to be RACT measures but do not meet RACT requirements. In these instances, EPA approves the measure under section 110(k) as strengthening the SIP (that is, adding the measure results in more federally-enforceable emission reductions) but disapproves the measures under CAA title I, part D as not meeting RACT. In these cases, the state remains subject to sanctions and FIPs until it submits and EPA approves a measure that fully meets the RACT requirements.

There are, of course, other required tests for approval of SIP revisions than the three explicitly discussed here including completeness (section 110(k) and state adoption after reasonable notice and public hearing (section 110(l)). To the extent they are applicable to today's proposal, these other tests are addressed elsewhere in this TSD.

Background concentrations at each of the monitoring sites were substantial (80 to 90 g/m³). Analysis of the causes of the high background levels was not part of the microscale protocol. It is possible, therefore, that there are other significant sources contributing to the exceedances at this monitor that have not been identified because they only contribute to background.

The identified control measures for unpaved parking lots are also applicable to unpaved roads.

Application of Rule 310 to agricultural sources including fields and aprons is affected by the provision in section 102 (incorporating A.R.S. 49-504.4) that the rule "shall not be construed so as to prevent normal farm cultural practices." Therefore, applicability of the rule to such sources depends on what dust-generating operation is occurring at the source. In other words, Rule 310 applies to some operations on agricultural fields and aprons and not to others.

This provision was subsequently deleted from the rule.

Both unpaved parking lots and unpaved roads are subject to permitting if they are located on a source that is subject to permitting such as an industrial facility or a construction site.

During the fall and winter this coordinator is also responsible for implementing the residential wood burning restriction rule. Given the demonstrated contribution of earth moving sources to Maricopa area PM-10 exceedances, MCESD may want to re-evaluate splitting the Coordinator's time between the fugitive dust and no burn programs

MCESD is addressing the permitting process for stationary sources subject to dust control plan requirements in a work flow review and analysis of the Department's permitting process. Recommendations from this review (such as revised permitting procedures) will be implemented in July, 1997. Plan, Appendix E, Letter, Joy Bell, MCESD, to Joe Gibbs, ADEQ, May 6, 1997 (Bell letter) Improved permitting of these sources should result in better inspections.

EPA recently complete a review of permit files at MCESD. One of the focuses of this file review was to evaluate the effect of the SOPs on the completeness and quality of inspections. The review showed that the SOPs have resulted in more thorough and higher quality inspections. Memorandum, Colleen McKaughan to Doug McDaniel, "File Review at Maricopa County Environmental Services Department April 7 - 10, 1997" May 19, 1997 (found in the docket).

The microscale plan only assumes emission reductions from sources subject to permitting (e.g., earth moving, disturbed cleared areas). No reductions are assumed for nonpermitted sources (e.g., vacant lots, unpaved parking). See Plan, pp. 37 - 40.

Many of the cities and towns in Maricopa County have already committed to undertake other PM-10 control measures such as paving unpaved roads. MAG 1991 Particulate Plan for PM-10 for the Maricopa County Area and 1993 Revisions. July, 1993

As noted previously (see footnote 11 of this TSD), there may be other significant sources impacting the monitors that were not identified in the microscale modeling because they formed part of the background concentration.

Industrial haul roads are considered permitted sources in the microscale plan because, at the Salt River site where industrial haul roads were a significant source category, the industrial haul roads implicated in the modeling are located on permitted sources.